IN THE CLAIMS:

The following is a complete listing of the claims in the application:

Claims 1-15 (canceled)

16. (original) A method for fabricating a molecular wire transistor comprising a pair of crossed wires, at least one of said wires comprising a doped semiconductor material, said method comprising providing a first said wire having a first conductivity type, providing a second said wire with either Lewis acid functional groups or Lewis base functional groups to provide said second wire with a second conductivity type opposite to that of said first wire, and causing said pair of wires to cross, thereby forming a junction with modulation doping where one wire crosses another.

17. (original) The method of Claim 16 wherein one of said wires comprises a semiconductor material and is nanoscopic in the direction of the shortest line between the two wires.

18. (original) The method of Claim 17 wherein the other wire is nanoscopic or larger in the direction of the shortest line between the two wires.

19. (original) The method of Claim 16 wherein one of said wires comprises N-doped semiconductor and the other wire comprises P-doped semiconductor.

20. (original) The method of Claim 19 wherein one wire of a given doping induces a base region by modulation doping in said other wire around said junction, thereby defining emitter and collector regions on either side of said base region in said other wire.

21. (original) The method of Claim 20 wherein a PNP bipolar transistor is formed.

22. (original) The method of Claim 20 wherein an NPN bipolar transistor is formed.

23. (original) The method of Claim 16 wherein one of said wires comprises doped semiconductor and the other wire comprises a metal.

24. (original) The method of Claim 23 wherein said functional groups on said metal wire comprise a first portion that is electrically insulating and extends from said metal wire and a second portion joined to said first portion comprising said Lewis acid or base functional group and wherein said metal wire induces a gate region in said doped semiconductor wire around said junction, thereby defining source and drain regions on either side of said gate region in said other wire.

25. (original) The method of Claim 24 wherein an N-channel field effect transistor is formed.

26. (original) The method of Claim 24 wherein a P-channel field effect transistor is formed.

27. (previously presented) The method of Claim 16 wherein said second wire also comprises a semiconductor material, and wherein both said semiconductor wires are provided with functional groups, one said wire being provided with Lewis acid functional groups and the other said wire being provided with Lewis base functional groups.

28. (original) The method of Claim 16 wherein either said Lewis acid functional groups or said Lewis base functional groups have two distinct oxidation-reduction states, a conductive state and a relatively insulating state with a large I-V hysteresis separating the two states, to form a state change transistor or a switch that is capable of being set by application of a voltage that is larger than the voltage at which the transistor operates.

29. (original) The method of Claim 28 wherein said state change is set, thereby forming a transistor.

30. (original) The method of Claim 28 wherein said state change is not set, thereby forming either an open or closed switch.

Claims 31-46 (canceled)